

Claims

What is claimed is:

- 5 1. A method of requesting data from a host over a data bus comprising:
 comparing a first data write request identifying first data and second data to be
 written and a later received second data write request identifying fourth data and third
 data to be written, the third data overwriting the second data;
 sending a request to the host to transmit the first data, the third data and the fourth
10 data over the data bus; and
 indicating to the host that the first data write request and the second data write
 request have been performed.
- 15 2. The method of claim 1, wherein sending comprises:
 sending a first request to the host identifying the first data write request and
 requesting the first data.
- 20 3. The method of claim 2, wherein sending further comprises:
 sending a second request to the host identifying the second data write request and
 requesting the third data and the fourth data.
- 25 4. The method of claim 3, further comprising:
 receiving the first data, third data and fourth data; and
 buffering the first data, third data and fourth data on a write buffer in a sequence
 the data are to be written to data storage media.
- 30 5. The method of claim 1, wherein indicating further comprises:
 deleting the first data write request and second data write request from a request
 queue.
6. The method of claim 1, further comprising:

determining a sequence that the first data, third data and fourth data are to be written;

sending a first request to the host identifying the first data write request and requesting the first data;

5 sending a second request to the host identifying the second data write request and requesting the third data;

sending a third request to the host identifying the second data write request and requesting the fourth data; and

10 sending the first request, second request and third request in the sequence that the first data, third data, and fourth data are to be written.

7. The method of claim 1, wherein indicating comprises:

sending a first indication after receipt of the first data; and

sending a second indication after receipt of the third and fourth data.

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8. The method of claim 1, wherein comparing comprises:

comparing a first data write request identifying first data and second data to be written, a previously received third data write request identifying fifth data to be written, and a later received second data write request identifying fourth data and third data to be written, the third data overwriting the second data and the fifth data if the data write requests were performed sequentially; and

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indicating to the host that the third data write request has been performed without receiving the fifth data identified by the third data write request.

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9. A method of transferring data from a host to a disc drive over a bus comprising:

queuing a plurality of data write requests including a first received data write request, each data write request identifying one or more logical block addresses (LBAs) to write associated data to on the disc drive;

5 determining first LBAs identified by the first received data write request that are not overwritten by later received data write requests in the plurality of data write requests; and

 sending at least one data transfer request to the host to transmit over the bus only the data associated with the first LBAs of the first data write request.

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10. The method of claim 9 further comprising:

 repeating the determining operation for each of the plurality of data write requests to identify second LBAs in each data write request that are not overwritten by later received data write requests in the plurality of data write requests; and

15 sending at least one data transfer request to the host for each data write request to transmit over the bus only the data associated with the identified second LBAs that are not overwritten by later received data write requests in the plurality of data write requests.

11. The method of claim 9 further comprising:

20 deleting the plurality of data write requests; and
 sending a notification that the plurality of data write requests have been performed.

12. The method of claim 9 further comprising:

25 maintaining a sequential queue for receiving the plurality of data write requests while the disc drive is busy.

13. The method of claim 9, wherein each data write request includes a tag that identifies the data write request, an offset that identifies an LBA, and a length and further comprising:

30 including in each data transfer request a tag, an offset and a length identifying the data write request and LBAs that are not overwritten by later received data write requests.

14. The method of claim 10 further comprising:

generating all the data transfer requests for the data associated with the identified first and second LBAs that are not overwritten by later received data write requests in the plurality of data write requests prior to sending any of the at least one data transfer requests; and

sequencing the generated data transfer requests into a sequence that will result in the data being received in a logical order.

15. The method of claim 14, wherein sending comprises:

sending the generated data transfer requests in the sequence.

16. The method of claim 15, further comprising:

determining a second received data write request that contains only LBAs that are overwritten by later received data write requests in the plurality of data write requests; and

sending a notification to the host that the second data write request has been performed without receiving the data identified by the second data write request.

17. A bus-connected data storage device comprising:
a queue for receiving a plurality of data write requests from a host computer, the data
write requests identifying data to be written; and
a means for comparing the data write requests in the queue and requesting only data
5 identified by the data write requests that are not overwritten by later received data write
requests in the queue.

18. The data storage device of claim 17 wherein the means for comparing and
requesting generates at least one data transfer request for each of the plurality of data write
10 requests that contains data that is not overwritten by later received data write requests in the
queue.

19. The data storage device of claim 18 wherein the means for comparing and requesting
determines the appropriate sequence to send the data transfer requests in order to receive the
15 data in an order the data is to be written.